

2023 IQBT Undergraduate Championship

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Round 2 – Tossups

1. **One organism living in these environments concentrates nitrate in its blood to be reduced by bacteria in its trophosome (“TROH-fuh-soam”). A sample from these environments led to the discovery of *Loki-archeota*, part of the “Asgard” superphylum closely related to eukaryotes. Gamma-proteo-bacteria serve as endo-symbiotes to species like *Rimicaris exoculata* in these environments. Michael Russell proposed that alkaline types of these environments could form “green rust” that serves as templates for the (*) origin of life via spontaneous assembly of iron sulfide membranes. *Riftia pachyptila* (“puh-KIP-till-uh”) and *Alvinella pompejana* (“POM-pay-AH-nuh”) are large annelids that live in these environments, which also contain bacteria which use chemo-synthesis from hydrogen sulfide. For 10 points, name this dark, high-pressure ecosystem home to giant tube worms.**

ANSWER: hydrothermal vent [accept deep-sea vent or black smoker or white smoker; prompt on ocean floor or mid-ocean ridges or divergent boundaries on the ocean floor or the bottom of the sea or the benthic zone or similar answers]

2. **This city’s bohemian Vila Madalena neighborhood contains the graffiti-covered Batman Alley. This city hosted Modern Art Week in 1922 in its neoclassical Municipal Theater. A controversial monument to explorers by Victor Brecheret (“bresh-uh-RAY”) and an obelisk commemorating this city’s 1932 Constitutionalist Revolution are both found in this city’s Ibirapuera (“ee-bee-rah-PWAY-rah”) Park, designed by Roberto Marx. The governor of the state named for this city resides in (*) Bandeirantes (“BAN-jee-RAN-cheez”) Palace, named for explorers who mostly came from here. Queen Maria Leopoldina is buried beneath an independence monument in this non-capital city near Ipiranga Brook, where independence was proclaimed by Pedro I (“the first”). For 10 points, name this most populous city in Brazil.**

ANSWER: São Paulo (“sao PAO-loo”)

3. **A book titled for this author analyzes his constant references to tripe and a sentence by him that uses twelve synonyms for feces as part of his “language of the marketplace.” After a sheep merchant mocks one of this author’s characters for being a cuckold, the latter chucks one of the merchant’s sheep overboard a ship, causing all the other sheep to follow, dragging the merchant, Dingdong, with them. This author partly titles a book that discusses the aesthetics of the (*) grotesque and the carnivalesque. That book by Mikhail Bakhtin is titled for this author *and his World*. The phrase “Do What Thou Wilt” is the motto of the Abbey of Thélème (“tay-LEM”) in a satirical novel by this author titled for a pair of giants. For 10 points, name this French author of *Gargantua and Pantagruel* (“PAN-tuh-grool”).**

ANSWER: François Rabelais (“rab-uh-LAY”)

4. The N·L·D·R·L formed to defend this organization, a supporter of which committed an act blamed on the inspiration of a woman named Conchita. Thinking it would be popular, a leader invited the press to the public execution of a member of this organization, Miguel Pro. A one-armed leader was assassinated by a defender of this organization during a conflict whose peace was brokered by John Burke and Ambassador Dwight Morrow. José de León Toral, a defender of this organization, killed (*) Alvaro Obregón. This organization was targeted by Article 130 of a country's constitution. By trying to enforce a 1917 provision against land ownership and political activity by this organization, Plutarco Elías Calles ("ploo-TARK-oh eh-LEE-as kai-EZ") sparked the Cristero War. For 10 points, name this group whose foreign priests were expelled from Mexico. ANSWER: Roman Catholic Church [or Roman Catholicism; accept Cristeros until mention; prompt on Jesuits or the Society of Jesus]

5. A photographer from this country depicted a nude young couple clad in raincoats, sitting in the trees at different elevations, in a photograph often compared to depictions of Adam and Eve. That photographer from this country took a picture of a musician with dyed green hair in *Frank, in the shower*, which became the cover to Frank Ocean's *Blonde*. Another photographer from this country digitally edited a power station out of a huge (*) color photograph depicting a river, and captured a dizzyingly well-stocked supermarket in his photo *99 Cent*. Monkeys take over a raft as the title conquistador vows to establish a dynasty in a film from this country, *Aguirre* ("uh-GHEE-ruh"), *the Wrath of God*. For 10 points, name this home country of Wolfgang Tillmans, Andreas Gursky and Werner Herzog. ANSWER: Germany [or Federal Republic of Germany; accept Deutschland; accept West Germany]

6. A collection of texts originally in this language was popularized by a translation of a version called "the Great Secret" by Abraham Anquetil-Duperron ("onk-TEEL doo-pay-RAHN"). A text in this language that contains the claim "he who knows the noblest and the best, becomes the noblest and the best" is part of a group whose name translates as "three sources" or "three axioms." That text in this language expresses the relationship between the self and totality using the phrase (*) "That Thou Art." A collection of texts written in this language introduced a distinction between ultimate reality—of which the self is part—and appearances, called *māyā* ("MAH-yah"), which inspired Arthur Schopenhauer and became the foundation of the Vedanta school. *Ātman* ("AHT-mahn") refers to the self in, for 10 points, what language used to write the Upanishads ("uh-PUN-ih-shuds")? ANSWER: Sanskrit [or sanskrtam]

7. While at an antique shop in a novel titled for one of these places, the protagonist buys an emerald ring that was stolen from a prince at a university. In a novel titled for one of these places, the protagonist throws himself in front of the bicycle of a haughty girl, and then wishes for her death daily, until she is shot by a deserter to whom she was bringing food. One of these places titles that novel, whose protagonist witnesses a woman squirt her own (*) breast milk into her lover's tea. Imanishi and Tsubakihara are killed when Honda's villa burns down in a novel titled for one of these places, the third in the *Sea of Fertility* tetralogy. For 10 points, the stammering Mizoguchi starts a fire at the end of a Yukio Mishima novel titled for what sort of building "of the Golden Pavilion"? ANSWER: temple [or tera; accept *The Temple of Dawn*; accept *The Temple of the Golden Pavilion*; accept *Akatsuki no tera*; accept Kinkaku-ji]

8. Martin Cubells’s restoration of this painting removed a partly-erect penis from the title character, whom Fred Licht read as an inversion of antisemitic tropes. Robert Hughes claims that the thigh of the title character in this painting was reappropriated a century later in the painting *Soft Construction with Boiled Beans*. This painting likely drew on an earlier Peter Paul Rubens depiction of the same subject, in which three stars appear above an (*) old man with a scythe. The painting *Leocadia* was originally displayed at the opposite end of a dining room from this painting, whose colossal title character is depicted with sickly orange skin, bulging eyes, and a shock of white hair. For 10 points, name this entry in Francisco Goya’s *Black Paintings* that depicts an aging Titan in the act of cannibalism.

ANSWER: Saturn Devouring his Son [or Saturno Devorando a su Hijo; or Saturn Devouring his Child; or Saturn Devouring his Children]

9. Analyzing this experiment using wave functions is used to show that “visibility-squared plus distinguishability-squared” is less than or equal to 1. A BBO crystal is used to generate entangled states in a version of this experiment in which there is a delay in obtaining path information. In a version of this experiment, obtaining “which way” information leads to a change in the results. A wire grid does not affect the results in a version of this experiment that may violate complementarity, conducted by (*) Afshar. In this experiment, when the path length differs by a half-integer multiple of the incident wavelength, destructive interference occurs. For 10 points, name this experiment that shows the wave nature of light, in which fringes appear when photons are fired through two rectangular holes.

ANSWER: Young’s double-slit experiment [or Young’s experiment; prompt on “quantum eraser” or “delayed-choice quantum eraser” with “What original experiment inspired that?”]

10. Howard Zinn’s *The Power and the Glory* excerpts a politician writing about the massacre of these people, saying: “horrible was the stink and scent thereof, but the victory seemed a sweet sacrifice.” Miantonomo refused an alliance with these people, who lost members to a breakaway tribe founded by Uncas. These people name a conflict during which Henry Vane ordered John Endicott to massacre the Niantic (“nee-ANN-tick”) on Block Island. The Mohegans (“MOH-hee-gans”) split from these people, who fought with the English at the (*) Great Swamp Fight during King Philip’s War. The Narangansett and colonists under John Mason massacred these people in Mystic, after which their land was divided by the Treaty of Hartford. For 10 points, name this tribe whose defeat in a namesake 1630s war cleared present-day Connecticut for colonial settlement.

ANSWER: Pequots (“PEE-kwots”) [or Pequods; or Pequot War]

11. Women of this group host baby showers called *kortar fashadura* (“kor-TAR fah-shah-DOO-rah”), during which baby clothes are sewn. The Rema (“reh-MAH”) rejects this group’s custom of not eating fish and milk together, which the Chida (“hee-DAH”) considered a copy error. A member of this group called Maran compiled this group’s customs into a law code called the “Set Table.” This group recites *selichot* (“seh-lee-HOTE”) every morning of the month of Elul (“eh-LOOL”). The Rashi script is sometimes named for these people, who share customs with the (*) Mizrahim (“miz-rah-HEEM”). These people speak the endangered language Ladino. This group are *not* prohibited from eating rice or legumes during Passover, and settled in the Middle East, North Africa, and the Mediterranean basin after the Alhambra decree. For 10 points, name this group of Jews descended from those expelled from Spain.

ANSWER: Sephardic Jews [or Sephardim; accept Mizrahi Jews or Mizrahim before mention; prompt on Jews; prompt on Spanish Jews, Portuguese Jews, or any nationality followed by Jews with “to what larger non-national group do they belong?”; reject “Ashkenazi Jews” or “Ashkenazim”]

12. In one scene, this character implies that the fat woman who lives upstairs caused plaster to crack while having sex. In another scene, this character describes being thrilled by watching a man smash lightbulbs with the heel of a slipper. The work she appears in ends with the sound of her “luxurious sobbing” while a man murmurs “Now, now, love. Now, love...” In her first appearance, this character accompanies her husband to a (*) bowling alley shortly after he throws a package of meat for her to catch. This woman is reassured by Eunice that she was right to choose not to believe that her husband raped her sister in their New Orleans apartment. For 10 points, name this sister of Blanche DuBois (“doo-BWAH”) whose name is bellowed by her husband, Stanley Kowalski.

ANSWER: Stella Kowalski [or Stella Dubois; prompt on Kowalski; prompt on DuBois]

13. Cellulose acetate (“ASS-uh-tate”) is the most common choice of equipment in a technique that calculates polymer molecular weight by measuring this quantity. The first person to synthesize acetaminophen (“uh-SET-uh-MEE-noh-fen”), Harmon Northrop Morse, is better known for studying this quantity and for improving Wilhelm Pfeffer’s (“feffer’s”) method of determining it. Staverman’s reflection coefficient is multiplied by the difference between two forms of this quantity in the (*) Starling equation. A proportionality constant of “ RT times the van ‘t Hoff factor” links molarity to this quantity. An external pump is used to oppose this physical quantity in a “reverse” method used for de-salination. For 10 points, name this quantity, the minimum amount of force per unit area required to prevent solvent flow across a semi-permeable membrane.

ANSWER: osmotic pressure [or oncotic pressure; prompt on pressure or pi; prompt on (membrane) osmometry with “What is the relevant physical quantity?”]

14. Sheldon Cohen developed a standard scale measuring perceived levels of this phenomenon, which he experimentally found makes people more susceptible to the common cold. Psychologist Shelley Taylor found that this phenomenon produces the “tend-and-befriend” response in women. In a common psychological model, exposure to this phenomenon makes people with a diathesis (“dye-ATH-uh-siss”) more likely to develop a mental disorder. Bruce McEwen defined allostatic load as the cumulative (*) damage this phenomenon causes the body. The tobacco industry funded Hans Selye’s (“SHAY-yay’s”) research on this phenomenon to promote the idea that it, not nicotine, causes heart disease. Robert Sapolsky’s research on this phenomenon in baboons led him to publish *Why Zebras Don’t Get Ulcers*. For 10 points, name this feeling of physical or emotional tension.

ANSWER: stress [or the diathesis-stress model]

15. This country’s 40-year period of rule by Christian Democratic parties ended after revelations of a coverup related to toxic levels of dioxin in eggs and chicken. In this country, 300,000 people participated in the White March to protest corruption surrounding the case of pedophile and human trafficker Marc Dutroux (“dew-TROO”). The Rexist party encouraged Nazi collaboration in this country, whose king had to resign after refusing to leave his army during a Nazi invasion. This country’s (*) Royal Question led to the ascension of King Baudouin (“boh-DWAN”). In 1968, students forced the split of this country’s Catholic University of Leuven (“LUH-ven”) after protesting its bilingual status. For 10 points, what country is divided into three regions: Flanders, Wallonia, and Brussels-Capital?

ANSWER: Kingdom of Belgium

16. A piece for strings by this composer opens *animato* with six rapid F minor seventh chords with added elevenths, followed by six rapid first-inversion C dominant seventh chords. This composer wrote a work for piano and orchestra whose finale opens with a repetitive xylophone rhythm meant to evoke a woodpecker. A largo instrumental aria titled “Song of Our Land” follows a *preludio* titled for a *capadocio* in an orchestral suite by this composer, who also wrote twelve études for (*) guitar for Andres Segovia. A piece for soprano and an orchestra of cellos and a toccata titled “The Little Train of the Caipira” are parts of nine suites by this composer, which combine Baroque and Latin American popular and folk styles. For 10 points, name this composer of *Bachianas* (“bah-kee-AH-nuhs”) *Brasileiras*.

ANSWER: Heitor Villa-Lobos (“villa-LO-boosh”)

17. One of these objects is central to a poem by Thjóðólf (“th’YOH-dolf”) which describes Thor’s defeat of Hrungrnir and Loki’s kidnapping of Iðunn (“ITH-un”), the Haustlöng. In the *Grímnis-mál*, Odin says “mountains and oceans” would burn if one of these objects fell from the sky. These objects name a hero who is praised by the line “That was one good king!” in an epic whose opening describes his ship-burial. Svalinn, which lies in (*) front of the Sun, is one of these objects, which name a type of warrior exemplified by Hervor, Lagertha, and Freydis Eiríks-dóttir. *Beowulf* begins by praising a son of Scaef (“shafe”) named for these objects. Brunhild is depicted as either a Valkyrie or one of these objects’ namesake “maidens.” For 10 points, name these typically wooden objects carried by warriors for protection.

ANSWER: shields [accept Scyld Scaefing (“shild shaving”) or shield maiden or shield wall]

18. After this ruler’s victory at the Battle of Hamath, he quickly reached a peace with the defeated Egyptians so he could rush home and bury his father in a casket adorned with gold pearls. The Esagila (“es-GEE-lah”) tablet says that this ruler rebuilt a seven story temple which had been destroyed by Sennacherib a century earlier. This ruler married the daughter of the Median king Cyaxares (“kee-ahk-SAH-res”) and completed construction of Etemenanki. This ruler led a coalition of Medes and Scythians which crushed (*) Necho II and the remnants of Assyria’s armies at the Battle of Carchemish (“KAR-kuh-mish”). This second king of the Chaldean dynasty besieged the capital of his vassal Zedekiah (“zeh-deh-KYE-uh”) and deported its inhabitants, including the prophet Jeremiah. For 10 points, what Neo-Babylonian king’s armies destroyed the First Temple in Jerusalem?

ANSWER: Nebuchadnezzar the Great [or Nebuchadnezzar II or Nabû-kudurri-usur or Nebuchadrezzar]

19. A poem by this author describes the upcoming springtime as “Earth’s immeasurable surprise” and begins by describing “Lambs that learn to walk in snow” who “Meet a vast unwelcome.” This author wrote, “The first day after a death, the new Absence / Is always the same” in a poem that ends “we should be kind / While there is still time,” about the accidental killing of a hedgehog. This author explained the meaning of his poem “First (*) Sight” in one of thousands of letters to his lover Monica Jones. He wrote a collection whose title poem is about a “three-quarters-empty train” ride during which the speaker observes a series of loud bridal parties. For 10 points, name this British author of “The Whitsun Weddings” whose poem “This Be the Verse” begins “They f*ck you up, your mum and dad.”

ANSWER: Philip (Arthur) Larkin (The second poem is “The Mower”)

20. A conjecture named for this object implies that any endomorphism of a Weyl (“vile”) algebra is an automorphism, and states that a polynomial mapping over the complex numbers is an automorphism if and only if this object is nonzero. Stiff O·D·E solvers usually require this object as an input. The left pseudo-inverse of this object multiplies the previous output to iterate the Gauss–Newton algorithm. In three dimensions, this object has the value “rho-squared times sine-of-phi” when transforming from spherical to (*) Cartesian coordinates. This object lacks maximal rank at a critical point. If this object is nonzero at a point, then the corresponding function is locally invertible there. For 10 points, give this term for the matrix of first derivatives of a vector-valued function, or the determinant of such a matrix.

ANSWER: **Jacobian** [accept **Jacobian** matrix or **Jacobian** determinant; note the word “Jacobian” can refer to either, and both are clued; prompt on determinant or matrix]

Round 2 – Bonuses

1. The Polish Jewish hunger for the messiah's return has proven a rich source for literature. For 10 points each:

[10m] This Polish author was working on a novel about the messiah's return when he was shot by a Nazi in 1942. A short story collection by him has been translated as *The Street of Crocodiles* or *The Cinnamon Shops*.

ANSWER: Bruno **Schulz**

[10e] Followers of the false messiah Sabbatai Zevi (“SHAHB-uh-tye Z’VEE”) feature in Isaac Bashevis Singer’s *Satan in Goray*, a novel written in this language. This is also the language of Sholem Aleichem’s (“SHAH-lum ah-LEK-um’s”) stories about Tevye (“TEV-yuh”) the Dairyman.

ANSWER: **Yiddish** [or **idish**]

[10h] The title character’s grandmother Yente, who gains ghost-like powers from swallowing an amulet, is a narrator in this Olga Tokarczuk (“toh-KAR-chook”) novel, centering on a real-life 18th-century Jew who claimed to be the messiah.

ANSWER: *The **Books of Jacob*** [or ***Księgi Jakubowe***] (The historical figure is Jacob Frank.)

2. In 1870, this composer became Wagner’s father-in-law, when Wagner married this man’s illegitimate daughter Cosima. For 10 points each:

[10e] Name this virtuoso pianist who wrote 19 *Hungarian Rhapsodies*.

ANSWER: Franz **Liszt** [or **Liszt** Ferenc]

[10h] While staying in Wagner’s home in Venice in 1882, Liszt wrote the first version of this piano piece, which has frequently been interpreted as about Wagner’s impending death. It begins with the notes F-sharp, E-flat, and A played twice in octaves and is dominated by diminished and augmented sonorities.

ANSWER: *La **lugubre gondola*** [or *The **Lugubrious Gondola***]

[10m] The first and second books of this series of piano pieces by a different composer conclude with “Venetian Boat Songs” depicting gondolas. The “Spinner’s Song” from Book 6 of this series has been nicknamed the “Bee’s Wedding.”

ANSWER: ***Songs Without Words*** [or ***Lieder ohne Worte***] (by Felix Mendelssohn)

3. This man played the lead in one of the first popular dramas written by an American, Robert Montgomery Bird’s *Gladiator*. For 10 points each:

[10h] Name this prominent American actor of the 1820s through 1850s. His rivalry with William Macready culminated in the Astor Place riots.

ANSWER: Edwin **Forrest**

[10m] Caleb, a mayor of New York City with this last name, dispatched a militia to quell the riots. Victoria, the first woman to run for President when she ran in 1872 for the Equal Rights Party, had this last name.

ANSWER: **Woodhull** [accept Caleb S. **Woodhull** or Victoria **Woodhull**]

[10e] Other prominent actors of the mid-19th century included Junius and Edwin, members of this family. Another actor from this family interrupted an 1865 performance of *Our American Cousin*.

ANSWER: **Booth** family

4. Counting the number of these entities present in a cluster compound can determine if its geometry is arachno-, hypho- (“HY-foh”), or klado-. For 10 points each:

[10h] Name these entities counted in Wade’s rules, which are also known as a “polyhedral skeletal” theory of these entities.

ANSWER: **electron pairs** [accept polyhedral skeletal **electron pair** theory; prompt on (valence) electrons or (skeletal) electrons or lone pairs]

[10e] This American chemist introduced the concept of electron pairs. He also discovered the co-valent bond and developed namesake “dot structures” to illustrate bonding.

ANSWER: Gilbert (Newton) **Lewis**

[10m] Kenneth Wade initially developed his electron pair counting rules to classify clusters composed of these two elements. Compounds of these two elements are the simplest to be stabilized by adducts with tetra-hydro-furan.

ANSWER: **boron** and **hydrogen** [or **B** and **H**; prompt on boranes]

5. The Senate committee specifically tasked with this function is also responsible for Homeland Security. For 10 points each:

[10m] Name this Congressional function. Chairs of the permanent committees dedicated to this function can issue unilateral subpoenas, and committees often make use of G·A·O reports in performing this function.

ANSWER: Congressional **oversight** of the executive branch [prompt on government affairs]

[10e] This term is used for Congressional meetings that have an investigative or oversight function. They are often very public, as in Supreme Court confirmations or impeachment trials.

ANSWER: **hearings**

[10h] This agency of the Library of Congress is responsible for much of the research behind Congressional oversight. In 2018, its reports were made comprehensively public for the first time.

ANSWER: **Congressional Research Service** [or **CRS**]

6. In his youth, this figure was protected from the sun by his brother Sampati when the two of them were having a flying contest. For 10 points each:

[10h] Identify this king of the vultures, who had his wings cut off while trying to rescue his friend’s wife.

ANSWER: **Jatayu**

[10m] Jatayu attempted to save Sita from being kidnapped by this ten-headed rakshasa (“RAAK-shah-suh”). This figure was killed by an arrow piercing his heart.

ANSWER: **Ravana**

[10e] Ravana was killed by this hero, the husband of Sita and namesake of the Hindu epic in which this story appears.

ANSWER: **Rama**

7. In *My Correct Views on Everything*, one of these historians responded to an open letter by mocking the simplicity of the other's desire to solve all of mankind's problems by simply thinking in terms of systems. For 10 points each: [10h] Name these two historians. One of these two historians, who wrote *Main Currents of Marxism*, criticized the thought of the other, who wrote *The Making of the English Working Class*.

ANSWER: Leszek **Kolakowski** ("KOH-wah-KOFF-skee") and E. P. **Thompson** [or Edward Palmer **Thompson**]

[10m] Thompson walked his initial open letter back a bit in a book titled for this word "of Theory." This word appears before "of Philosophy" in the title of a book by Marx and before "of Historicism" in the title of a book by Karl Popper.

ANSWER: **poverty** [accept *The Poverty of Theory*; accept *The Poverty of Philosophy*; accept *The Poverty of Historicism*]

[10e] The Kolakowski–Thompson feud is discussed in "Goodbye to All That?" by Tony Judt ("jut"), whose book *Postwar* chronicles Europe since this year, when World War II ended.

ANSWER: **1945** [prompt on 45]

8. In this play, director Lloyd Dallas is simultaneously sleeping with assistant stage manager Poppy Norton-Taylor and dimwitted actress Brooke Ashton, who is blind without her contact lenses, which she keeps losing. For 10 points each:

[10m] Name this Michael Frayn play about a disastrous rehearsal and two performances of the farce-within-a-farce *Nothing On*.

ANSWER: **Noises Off**

[10h] Stage manager Tim Allgood spends part of the first act of *Noises Off* fixing these objects. Near the end of the play, the cast echoes Lloyd's earlier claim that "it's all about" these objects "and [plates of] sardines."

ANSWER: **doors**

[10e] The common farcical element of having a character's pants fall down happens to Philip in *Nothing On* and to Estragon in this absurdist play by Samuel Beckett.

ANSWER: **Waiting for Godot** [or *En attendant Godot*]

9. These particles are produced via the burying of islands formed during Stranski–Krastanov growth. For 10 points each:

[10m] Name these zero-dimensional semiconductor nanoparticles, whose fluorescence depends on their confinement potential. The color of their emitted photons can be tuned by controlling particle size.

ANSWER: **quantum dots**

[10e] Quantum dots can be used as the "single electron" type of these electronic components. Moore's law claims that the number of these devices in an integrated circuit doubles roughly every two years.

ANSWER: **transistor**s [accept types of **transistor**s e.g. single electron **transistor**s, bipolar junction **transistor**s, and metal-oxide-semiconductor field-effect **transistor**s; prompt on "SET", "BJT" or "MOSFET"]

[10h] The TOPO ("TOH-poh") ligand often caps quantum dots made from the selenide of this element. Due to its toxicity, the European Commission has banned quantum dots including this element, even though it is the most common quantum dot source.

ANSWER: **cadmium** [or **Cd**; accept **cadmium** selenide]

10. A sculpture titled for one of these objects depicts Adam and Eve emerging out of uncarved marble. For 10 points each:

[10h] Name these objects that were reportedly the subject of thousands of sculptures by Auguste Rodin (“roh-DAN”). Rodin gave the titles *The Secret* and *The Cathedral* to two of his most iconic sculptures of these objects.

ANSWER: **hands** [prompt on body parts; prompt on fingers; reject “arms”]

[10e] Rodin depicted figures like Pierre de Wissant (“duh wee-SAHN”) with grotesquely enlarged hands in his sculpture memorializing the “Burghers” of this French city.

ANSWER: **Calais** (“kuh-LAY”)

[10m] This Modernist British sculptor followed Rodin’s example in creating a sculpture cast from her own left hand. This woman created many abstract sculptures she called “Forms,” which often featured holes she called “piercings.”

ANSWER: Barbara **Hepworth**

11. From June through October 2022, over 30 million people in this country were displaced by a series of severe floods induced by a severe monsoon season. For 10 points each:

[10e] Name this country. Earlier that same year, it ousted its prime minister Imran Khan.

ANSWER: **Pakistan** [or Islamic Republic of **Pakistan** or Islāmī Jumhūriyah **Pākistān**]

[10m] Pakistan co-chaired the November 2022 edition of this gathering, which established a relief fund for climate induced disasters such as the floods. This annual U.N. gathering is commonly known by a three-letter acronym.

ANSWER: **COP** [or **Conference of the Parties** of the UNFCCC; accept **COP-27**; accept **United Nations Climate Change Conference**]

[10h] In September 2022, China sent significant aid to this city in the flood-ravaged province of Balochistan. Nonetheless, a series of protests against a 40-year Chinese lease on this city’s port began in December 2022.

ANSWER: **Gwadar**

12. One of these things named for Canis Major is believed to be an irregular dwarf galaxy, and in the linear model, these regions collapse when they have a delta of 1.686. For 10 points each:

[10h] Name these regions of space often modeled as a top-hat shape in the early universe. These regions have increased mass, and collapse during structure formation.

ANSWER: **overdensity** [prompt on density or density fluctuations or density perturbations, as those include underdensities also]

[10e] Overdensities collapse into halos of this substance, which surrounds galaxies. This invisible substance explains why galaxy rotation curves don’t fall off radially, and makes up 27% of the mass-energy of the universe.

ANSWER: **dark matter** [accept cold **dark matter** or hot **dark matter**]

[10m] Spherical collapse leads to halos with a property named after this theorem. This theorem states that for particles in an inverse-square potential, twice the average kinetic energy equals the average potential energy.

ANSWER: **virial** theorem

13. A book partly named for these objects introduced the author’s *Metaphysics of Quality* and was inspired by a journey from Minnesota to California with the author’s son, Chris. For 10 points each:

[10m] Name these objects that partly title that embellished biographical book by Robert M. Pirsig.

ANSWER: **motorcycles** [accept *Zen and the Art of Motorcycle Maintenance*]

[10e] Hunter S. Thompson’s assignment to cover the Mint 400 motorcycle race for *Sports Illustrated* led to his autobiographical novel titled for *Fear and Loathing in* this American city.

ANSWER: Las **Vegas** [accept *Fear and Loathing in Las Vegas*]

[10h] An artist nicknamed Reno takes up motorbiking and aspires to beat the women’s land-speed record in this novel by Rachel Kushner, set in the 1970s.

ANSWER: *The **Flamethrowers***

14. This document was influenced by the writings of Jose Bautista Alberti, who used the slogan “to govern is to populate” in arguing for an influx of European immigration. For 10 points each:

[10m] Name this 1853 document enacted under Justo José de Urquiza (“HOOS-toh ho-SAY day oor-KEE-suh”). Domingo Sarmiento claimed that this document’s preamble was a literal copy of its American counterpart.

ANSWER: **constitution** of **Argentina** [or **Argentine Constitution** of 1853 or **Constitution** of the **Argentine Nation**]

[10h] This man was the last leader of the secessionist State of Buenos Aires, who refused to recognize the Argentine constitution. Santiago Derqui resigned the presidency after this man won the Battle of Pavon over Urquiza.

ANSWER: Bartolomé **Mitre** (“MEE-tray”)

[10e] In 1949, this leader passed a new Argentine constitution that revised much of the old one. This left-wing president and general was succeeded by his wife Isabel.

ANSWER: Juan **Perón**

15. There is much dispute over the scriptural authenticity of the requirement that these people follow Eight Garudhammas (“guh-roo-DUM-muhs”). For 10 points each:

[10h] Name these people who have received *upasampadā* (“oo-puh-SUM-puh-dah”) in Sri Lanka since 1998. 500 of them were led by Pajāpati Gotamī (“puh-JAH-puh-tee GOH-tuh-mee”).

ANSWER: **nuns** [or **bhikkhunis** or **bhikṣunīs**; prompt on **women** or **sisters** or **saṅgha** members; reject “*bhikkhus*” or “monks”]

[10m] Though the *Sutta Piṭaka* says women are as capable as men of becoming these figures, most Theravāda schools are reluctant to take nuns. Mahāyāna teachings contrast these figures, who have reached nirvana themselves, with bodhisattvas, who try to enlighten others.

ANSWER: **arhats** [or **arahants**]

[10e] This Buddhist tradition’s leader, Tenzin Gyatso, said that if the Buddha were alive, he would “certainly give us permission” to ordain nuns.

ANSWER: **Tibetan** Buddhism [or **Lamaism** or **Himalayan** Buddhism; accept **Gelug** school or **Yellow Hat**]

16. Legendarily, angels turned an emperor with this name into marble and buried him under a namesake city’s Great Gate, where he will rise once again. For 10 points each:

[10e] Give this name of the last Byzantine Emperor. Christianity was legalized in the Byzantine Empire after the deathbed conversion of an emperor with this name.

ANSWER: **Constantine** [accept **Constantine** XI Palaiologos or **Constantine** I or **Constantine** the Great]

[10m] Byzantines broke open Constantine V’s tomb and asked him to resurrect and come to their aid after Michael I lost a battle to these people. They defeated Constantine IV under Asparukh (“A·spare·UKH”) at the Battle of Ongal.

ANSWER: **Bulgars** [or First **Bulgarian** Empire]

[10h] A statue of Constantine XI stands in Mystras, which served as the capital of this Byzantine province, which Constantine XI ruled.

ANSWER: Despotate of the **Morea**

17. Answer the following about the 1957 jazz album *Ella Fitzgerald Sings the Duke Ellington Song Book*, for 10 points each.

[10e] The album opens with a performance of “Rockin’ in Rhythm” in which Fitzgerald copiously employs this technique of improvised singing using nonsense syllables. Louis Armstrong pioneered this singing technique on the song “Heebie Jeebies.”

ANSWER: **scat** singing [or **scatting**]

[10m] Several songs on the album were arranged by this longtime collaborator of Ellington’s, who composed “Lush Life,” “Satin Doll,” and “Take the ‘A’ Train.”

ANSWER: Billy **Strayhorn** [or William Thomas **Strayhorn**]

[10h] Like all of Fitzgerald’s Song Book albums, the Ellington Song Book album was released on this record label, which was founded by Norman Granz to showcase Fitzgerald.

ANSWER: **Verve** Records

18. This condition causes chocolate cysts on the ovaries and powder-burn lesions elsewhere, and sometimes co-occurs with the similar condition adeno-myosis. For 10 points each:

[10m] Name this painful condition in which the lining of the uterus migrates out.

ANSWER: **endometriosis**

[10e] Endometriosis cause pain in a region of the body that surrounds this bone. This wide bone at the level of the waist consists of the ilium, ischium (“ISS-kee-um”), and pubis, and contains the sockets for insertion of the femurs.

ANSWER: **pelvis** [or **pelvic** bones]

[10h] Polymorphisms in a ligand in this pathway are strongly linked to endometriosis. In this pathway, the namesake ligand binds to the receptor frizzled, leading beta-catenin (“beta-CAT-uh-nin”) to be translocated into the nucleus.

ANSWER: **Wnt** (“wint”)

19. This philosopher described arguments with the imaginary philosophers McX and Wyman about the existence of Pegasus in his paper “On What There Is,” which was later collected in *From a Logical Point of View*. For 10 points each:

[10m] Name this American philosopher. *From a Logical Point of View* also includes a paper by him that attacks the analytic-synthetic distinction and reductionism as the two central pillars of logical positivism.

ANSWER: Willard Van Orman **Quine**

[10h] In “On What There Is,” Quine coined this phrase for the problem of nonbeing, framed as the riddle “Nonbeing must in some sense be, otherwise what is it that there is not?”

ANSWER: **Plato’s beard**

[10e] Plato’s beard is so named because it dulls the “razor,” or law of parsimony, named for this 14th-century English nominalist philosopher.

ANSWER: William of **Ockham** [or Gulielmus **Occamus**; accept **Ockham’s razor**; prompt on **William**]

20. After additional lines of this author’s Fragment 58 were found on a papyrus at the University of Cologne, Anne Carson translated it under the title “The Beat Goes On.” For 10 points each:

[10e] Name this Ancient Greek poet who hailed from Lesbos and was called the “Tenth Muse.”

ANSWER: **Sappho** of Lesbos

[10h] Fragment 58 recalls the story of this character after bidding its listeners to “pursue the violet-laden Muses’ handsome gifts.” In an English-language poem, this man begs, “Release me, and restore me to the ground” so he can “earth in earth forget these empty courts.”

ANSWER: **Tithonus** (“TITH-uh-nuss”)

[10m] Fragment 58 describes this goddess’s arms as covered in roses. Homer’s usual epithet for this goddess describes parts of her body as rosy.

ANSWER: **Eos** (“AY-ohss”) [or **Aurora**; prompt on **dawn**] (The epithet is *rhodo-dáktylos* ‘rosy-fingered’.)